and that the occurrence of these, and consequent putrefaction, was due to contact with surfaces or ordinary water. Bacteria seemed to be the pioneers, if not the producers, of putrefaction. It was found that milk, meat, wine, etc. do not putrefy if they are kept from contamination with water, or any surface which has been superheated, or rendered innocuous by some anti-zymotic which is fatal to the life of bacteria. The experiments further showed that there is no developmental connection between bacteria and torula—consequently Hallier's theories fall to the ground.—*British Med. Journal,* August 19, 1871.

8. *On the Uses of the Uvula.*—Sir DUNCAN GIBB read a paper before the Section of Anatomy and Physiology of the British Association for the Advancement of Science at its recent meeting on this subject. Anatomists describe the action of the uvular muscle as an elevator which shortens the uvula. It is, however, a sentinel to the fauces, especially in the act of deglutition; for when any substance comes into contact with it, it excites the action of all the neighbouring muscles until it is got rid of. It possesses a function of not less importance, in holding the soft palate tense and firm in the medial line against the wall of the pharynx during the act of deglutition itself, and thus prevents the passage upwards of fluid or solid substances behind the nose. This was supported by experiments upon a person who had lost the bones of the nose, permitting of a view of the action of the soft palate from its nasal aspect during deglutition with or without food. Under either circumstance, a double arch was seen in the form of two convex swellings, held in a state of firm tension by the action of the uvula passing down the centre of the soft palate, with its end resting flat against the wall of the pharynx. The tension ceased the moment that the constrictors of the pharynx had fully exerted their influence over the substances swallowed. Whilst the uvula has its special uses in the act of deglutition, it exerts a not less decisive influence upon the voice when uttered in a very loud tone, or in singing the higher registers, in both sexes. Then its character as a levator or shortener is exerted. If this power is impaired by removal of the muscular (not the membranous) end, then the singing powers are damaged. The elongation of the uvula and its effects formed a subject of observation, a distinction being made between its elongated membranous end and the true muscular end. Speech, the author said, was modulated by the soft palate and uvula, and the motor power of the latter is unquestionably exerted in pronouncing the letters K, Q, and X, with their associations, more especially the gutturals of the various languages.—*Med. Times and Gaz.*, Aug 12, 1871.

9. *Fermentation and Disinfection.*—Prof. HOPPE-SEYLER, along with Dr. N. ZAPOLSKY, has recently made a most important contribution to our knowledge of the processes of putrefaction and disinfection (*Med.-Chem. Unters.*, 1871, pp. 557–581). His experiments have a very significant bearing on Pasteur's researches. Hoppe-Seyler suggested to Zapolsky that the latter should first investigate the action of carbolic acid on albuminous matters and on ferments. This was done, and it was found that the acid precipitates albuminous liquids only when these are neutral, or nearly so, and the acid is in almost saturated aqueous solution. The action of carbolic acid on ferments was most remarkable, for it was ascertained that neither the formation of hydrocyanic acid from the fermentation of bitter almonds, nor the generation of oil of mustard, nor the conversion of starch into dextrine and sugar by diastase or saliva, is prevented by carbolic acid. The solution of fibrin by the gastric juice was indeed prevented by the acid, but not till a considerable quantity had been added.

At this point Hoppe-Seyler himself took up the research. His remarks, no less than his experiments, are of a highly instructive nature. He first states that the ferments operated upon by Zapolsky were entirely such as are formed of chemical insoluble substances. Liebig's altered views on fermentation, putrefaction, and eremacausis are next criticized, and Pasteur's assumption that because living organisms are invariably present in putrefying and fermenting fluids, *therefore* those organisms are necessary to, and the cause of, the changes going on, is controverted. It is true, he says, that the organisms may contain the ferment, but it is not the less necessary to separate the ferment from the organism in order to form a correct estimate of the questions at issue. No clear line is drawn between fermentation and putrefaction.

In Hoppe-Seyler's experiments, the serum of pus, filtered and perfectly clear, and hydrocele fluid, were treated in various ways, some of the experimental tubes being hermetically sealed with almost entire exclusion of air, others being loosely corked; and they were exposed to varying temperatures up to 58° for various periods of time. The results show that the fluids underwent putrefaction, whether living organisms were present or not, and that these exercised apparently no influence on the rapidity of the process, but that this was solely dependent on temperature. Two similar fluids were kept, the one loosely corked at a temperature of 68° F., the other in an hermetically sealed tube at 108°, for equal lengths of time. At the end of the experiment the former, which swarmed with monads and vibriones, had undergone much less putrefaction than the latter, in which no signs of life or organization could be detected.

The action of carbolic acid on the lower organisms and on ferments was demonstrated to be analogous to that of heat. If a putrefying albuminous solution be gradually heated, first the organisms therein perish, then at a more elevated temperature the ferment is altered so as no longer to act as a ferment. So, on adding carbolic acid to a similar solution, all life ceases when 1½ per cent. of acid has been added, whilst the putrefaction of albumen will proceed, though slowly, with as much as 1 per cent. of the disinfectant. Commencing coagulation of the albumen appears to set a limit to the splitting up of this substance under the action of a ferment.

Incidentally it was found that cholesterine disappears in putrefying solutions, so that this substance can no longer be regarded as a product of the splitting up of albumen by fermentative changes; it is more probable that it is a product of oxidation.

Whilst it is thought to be proved for some ferments, and asserted of others, that living organisms are not indispensable to their commencement and continuance, it is not pretended that these processes do not stand in a definitive relation to the lower organisms; the ferment cannot be renewed without the organism.

An elaborate theory, supported by experiments, is next advanced as to the source whence such organisms as live in fermenting liquids with entire exclusion of oxygen, derive the force necessary for their growth and the decomposition of the fermenting substances, and this is thought to be derived from the heat set free by the splitting up of complex into simpler substances.

Hoppe-Seyler's observations on the use of disinfectants are most important. He points out that his researches show how necessary it is not only to destroy the products of putrefaction and fermentation—for the destruction of such ill-smelling gases as sulphuretted hydrogen and ammonia can have no more real influence on the fermentative changes involved in cholera, typhus, &c., than the removal of carbonic acid can have upon the progress of alcoholic fermentation—but also to go beyond even the destruction of the living organisms, and attack the ferment, which, as has been pointed out, is much more resistant than the organisms. Disinfectants, he thinks, act by forming precipitates with ferments, but it is not proved that these may not resume their activity under altered conditions. Of all aerial disinfectants he thinks sulphurous acid gas, from burning sulphur, the best. One or two per cent. of the gas in a room will entirely prevent or stop the growth of the lower organisms. This quantity is obtained by burning half a drachm or a drachm respectively of sulphur for each 100 cubic feet of space to be disinfected.—*Lancet*, Aug. 26, 1871.